BIOGRAPHICAL SKETCH FOR PERMANENT NIH INTRAMURAL SCIENTIST

NAME	*TITLE*	*BIRTHPLACE & DATE*	*CITIZENSHIP*
Frank Cuttitta, PhD	Director, NCI Angiogenesis Core Facility	Brooklyn, New York November 7, 1947	USA

INSTITUTE/DIVISION/LABORATORY	*OFFICE (Bldg/Rm No.)*	*LABORATORY (Bldg/Rm No.)*
NCI/CCR/OD	ATC/115C	ATC/115

EDICATION AND TRAINING:

Years	*Institution*	*Degree*	*Disciplines*
1965-1970	University of Maryland	B.S.	Microbiology
1970-1980	University of Maryland	Ph.D.	Immunology/Biochemistry

CHRONOLOGY OF EMPLOYMENT:

1970-1972	VA Hospital, Washington, DC	Microbiologist, GS-5	Platelet Aggregation Studies
1972-1975	VA Hospital, Washington, DC	Microbiologist, GS-7	Thyroid Research, Peptide ID/RIA
1975-1978	VA Hospital, Washington, DC	Microbiologist, GS-9	Sickle Cell Research Hemoglobin ID/RIA
1978-1980	VA Hospital, Washington, DC	Microbiologist, GS-11	Lung Cancer Research MoAb Development
1980-1982	VA Hospital, Washington, DC	NIH Postdoctoral Fellow	Lung Cancer Research Autocrine Growth Factors
1982-1984	Navy Medical Hospital, Bethesda, MD	Staff Fellow	Lung Caner Research Neutralizing MoAb
1984-1986	Navy Medical Hospital, Bethesda, MD	Senior Staff Fellow	Lung Caner Research Drug Development
1986-1989	USUHS Bethesda, MD	Research Assistant Professor of Medicine	Lung Caner Research Drug Development
1989-1991	USUHS Bethesda, MD	Research Associate Professor of Medicine	Lung Caner Research Drug Development
1991-1995	NCI/DBS/BPRB Rockville, MD	Deputy Branch Chief	Lung Caner Research Drug Development
1995-1997	NCI/DBS/BPRB Rockville, MD	Acting Branch Chief	Lung Caner Research Drug Development

1997-2006	NCI/CCR/CCBB Bethesda, MD	Chief, Cancer Cell Peptide Regulatory Section	Senior Investigator Peptide Growth Factors
2006-present	NCI/CCR/OD/ACF Gaithersburg, MD	Director, NCI Angiogenesis Core Facility (ACF)	Assay Development Drug Identification Standardization

RESEARCH INTERESTS AND ACCOMPLISHMENTS:

Peptide growth factors (PGF) are key mediators of cell proliferation in both normal (embryogenesis) and disease states (cancer). As a clinical intervention approach, identifying which PGFs are responsible for what proliferative disorders is a major undertaking targeted by pharmaceuticals in developing drugs that could augments (wound repair) or suppress (cancer) cell growth. Recently, bioregulatory drugs of PGFs that induce neovascularization or lymphangiogenesis have been utilized as primary treatment strategies for such disease as cancer, macular degeneration and stroke. My group has identified and characterized several PGFs (gastrin releasing peptide [GRP], adrenomedullin [AM], and proadrenomedullin N-terminal 20 peptide [PAM]) that stimulate endothelial cell proliferation. We have developed reagents (neutralizing monoclonal antibodies or small molecule inhibitors) that block their angiogenic potential and inhibit the in vivo growth of tumor cells in athymic nude mouse xenograft models. Unfortunately, given the complete lack of universally accepted assay standards in the collective angiogenesis field, there are major difficulties getting a consensus on what assays are best used to determine drug efficacy. Hence, the NCI Angiogenesis Core Facility (ACF) was established in May 2006 as part of the Trans-Institute Angiogenesis Research Program (TARP) of the NIH to improve upon existing assays measuring endothelial cell proliferation and to set universal standards in the field. Such growth assays included; dye uptake, tube formation, aortic ring, chorioallantoic membrane (CAM), and the directed in vivo angiogenic assay (DIVVA). In addition, fluorescence based assays were developed utilizing immortalized endothelial cells stably transfected with multicolored proteins for high throughput anti-angiogenic drug screening. Image analysis computer programs capable of objectively quantitating tube formation assays or assessing vascular density in tissues were also generated allowing laboratories to communicate with one another using a universal language when comparing effectiveness of anti-angiogenic therapeutics. Finally, technology established by the ACF was made available to the intramural/extramural community via NCI Technology Transfer Center, educational wet-lab courses offered through the NIH/Foundation for Advanced Education in the Sciences (FAES) or through active research collaborations.

IMPORTANT AND RECENT PUBLICATIONS (8 selected from over 160 peer-reviewed publications):

Cuttitta, F., Carney, D.N., Mulshine, J., Moody, T.W., Fedorko, J., Fischler, A., and Minna, J.D.: Bombesin-like peptides can function as autocrine growth factors in human small cell lung cancer. **Nature (London) 316**:823-826, 1985.

Garayoa M, Martínez A, Lee S, Pío R, An WG, Neckers L, Trepel J, Montuenga LM, Ryan H, Johnson R, Gassmann M, and Cuttitta F. Hypoxia-inducible factor-1 (HIF-1) upregulates adrenomedullin expression in human tumors cell lines during oxygen deprivation: A possible promotion mechanism of carcinogenesis. **Mol. Endocrinol. 14**:848-862, 2000.

Pío R, Martínez A, Unsworth E, Kowalak JA, Bengoechea JA, Elsasser TH, and Cuttitta F. Complement factor H is a serum binding protein for adrenomedullin. The resulting complex modulates the bioactivities of both partners. **J. Biol. Chem. 276**:12292-12300, 2001.

Martínez A, Vos M, Guédez L, Kaur G, Chen Z, Garayoa M, Pío R, Moody T, Stetler-Stevenson WG, Kleinman HK, and Cuttitta F. The effect of adrenomedullin overexpression in breast tumor cells. **J Natl Cancer Inst 94**:1226-1237, 2002.

Martínez A, Zudaire E, Portal-Núñez, Guédez L, Stetler-Stevenson WG, and Cuttitta F. Proadrenomedullin N-terminal 20 peptide is a potent angiogenic factor and its inhibition results in reduction of tumor growth. **Cancer Res 64**:6489-6494, 2004.

Martínez A, Zudaire E, Julián M, Moody WT, and Cuttitta F. Gastrin-releasing peptide (GRP) induces angiogenesis and the specific GRP blocker 77427 inhibits tumor growth in vitro and in vivo. **Oncogene 24**:4106-4113, 2005.

Zudaire E, Martínez A, Garayoa M, Pío R, Kaur G, Woolhiser MR, Metcalfe DD, Hood WA, Siraganian RP, Guise TA, Chirqwin JM, and Cuttitta F. Adrenomedullin is a cross-talk molecule that regulates tumor and mast cell function during human carcinogenesis. **Am J Pathol 168**:280-289, 2006.

Zudaire E, Cuesta N, Murty V, Woodson K, Adams L, Gonzalez N, Martinez A, Narayan G, Kirsch I, Franklin W, Hirsch F, Birrer M, and Cuttitta F. The aryl hydrocarbon receptor repressor is a putative tumor suppressor gene in multiple human cancers. **J. Clin. Invest.** (In Press).